

9.2 DYNAMICS OF THE UPPER MIDDLE ATMOSPHERE (80 - 110 KM) AT TROMSÖ, JUNE - DECEMBER 1987, USING THE TROMSÖ/SASKATOON M.F. RADAR

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A real-time-winds (RTW) system from Saskatoon operated with the Tromsö M.F. (partial reflection) radar on a continuous basis, June - December 1987. Profiles with 3 km resolution were obtained every 5 minutes -- weak ionization, and few geomagnetic disturbances limited the observations normally to 80 - 110 km. However, daily mean winds, tidal characteristics (24-, 12-h) such as amplitudes, phases and wavelengths, and gravity wave characteristics (intensities, mean directions) are available throughout this interval, which includes MAC-SINE and Epsilon. This is particularly valuable in defining the background state for some experiments, e.g., rockets, and for comparison with related parameters from the lidar and other radars (EISCAT, SOUSY-VHF). Comparisons with dynamical parameters from Saskatoon (52°N) are made: the zonal circulation was weaker at Tromsö, tidal amplitudes smaller, and summer 12-h tidal wavelengths shorter (~ 80 km vs ~ 100 km). The fall transition for this tide occurred in September, earlier than observed elsewhere. Initial comparisons with other experimental systems are also made.

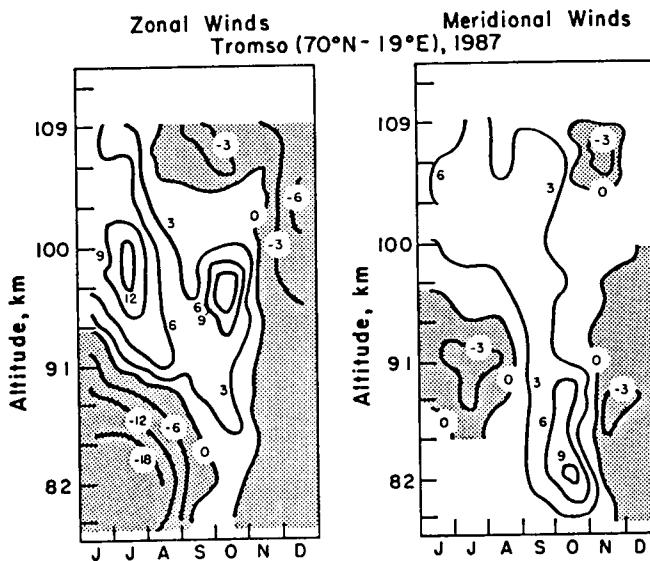


Figure 1. Mean winds: above 100 km values refer to a ~5 km layer near 100 km.

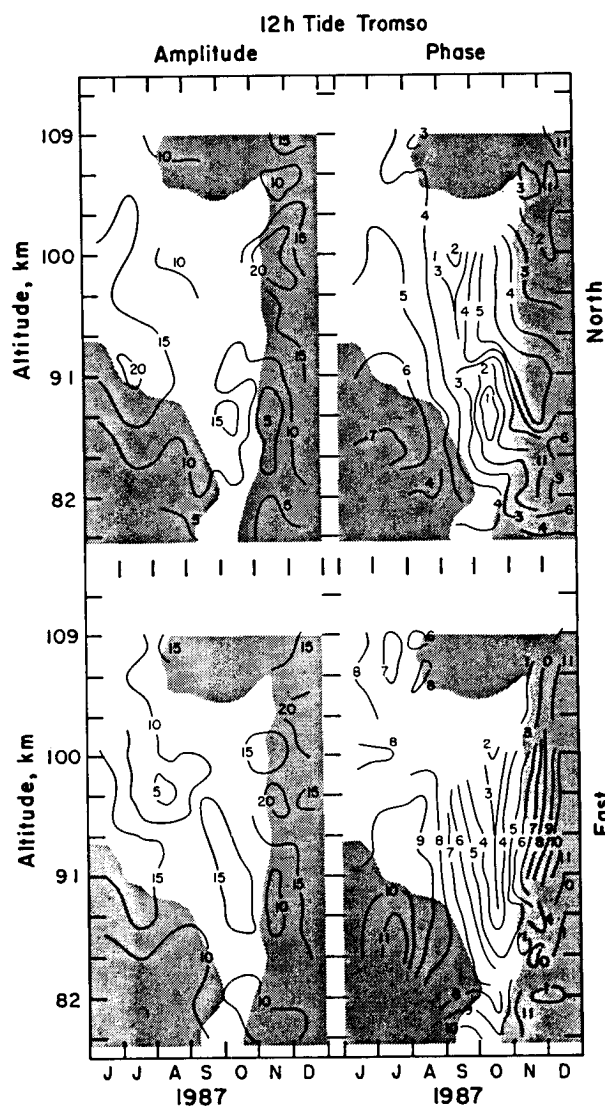


Figure 2. Semidiurnal tides.

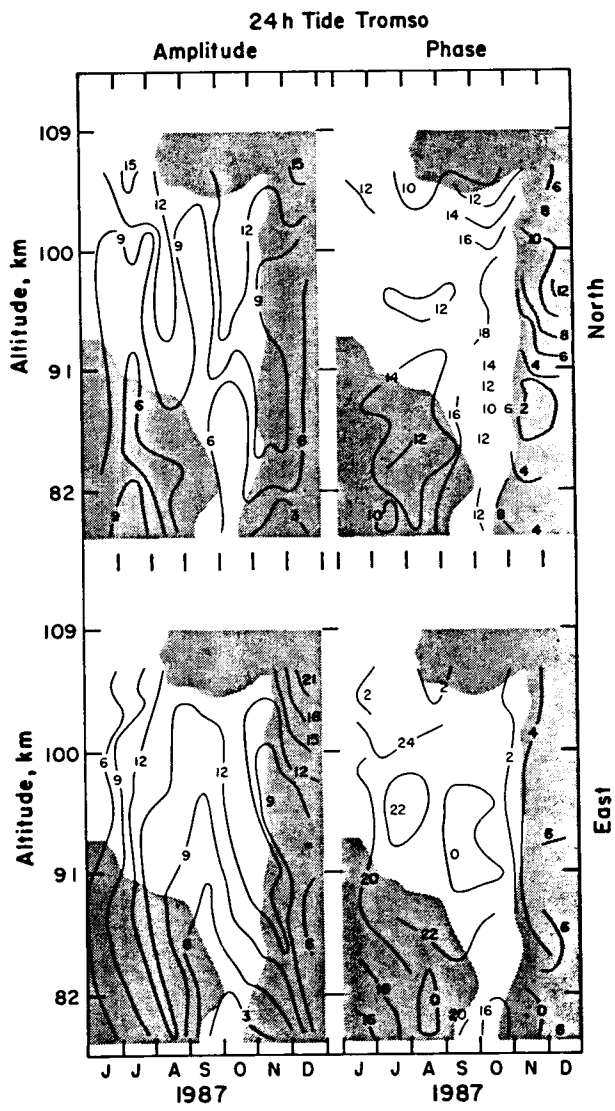


Figure 3. Diurnal tides.

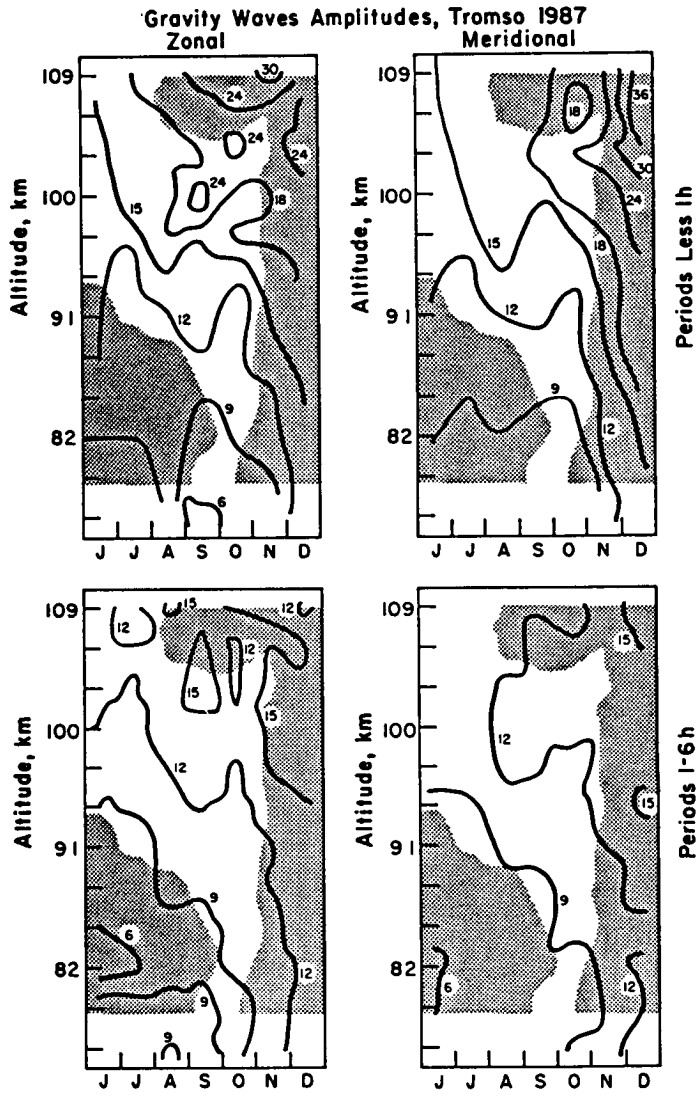


Figure 4. Gravity wave amplitudes.

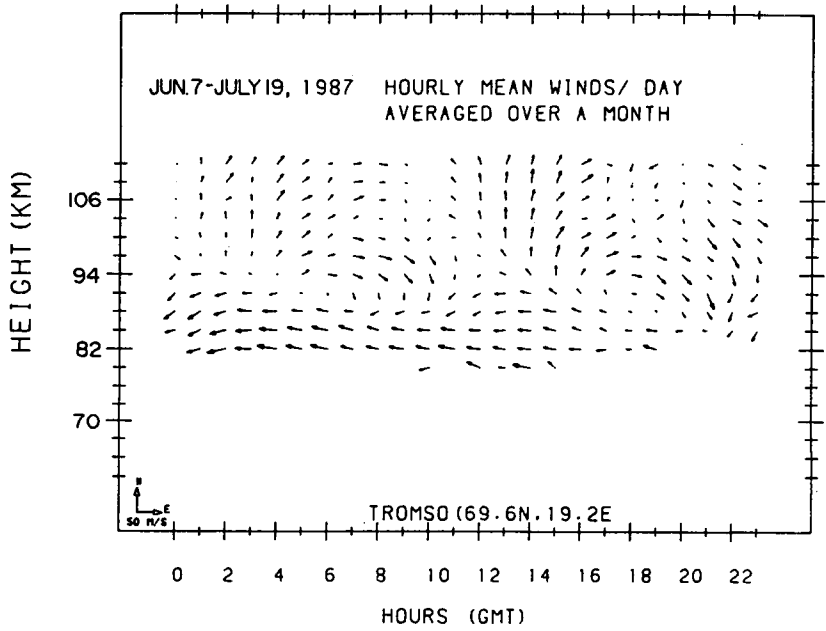


Figure 5. Mean day for SINE.

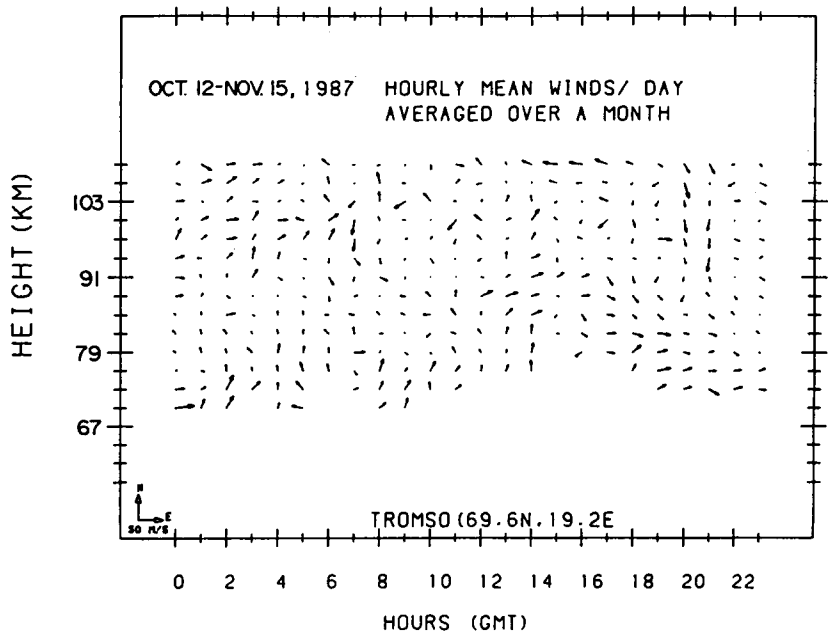


Figure 6. Mean day for Epsilon.